

CLAIMS

1 1. (currently amended) A method for routing signals in a switch of a telecommunications
2 network, comprising the steps of:

3 (a) receiving an incoming signal at the switch;

4 (b) slicing data in the received incoming signal into a plurality of sub-signals, wherein the
5 plurality of sub-signals are processed in parallel by, [[; (c)]] for each sub-signal:

6 [[(1)]] (i) dividing the sub-signal into one or more subsets of data;

7 [[(2)]] (ii) applying a checksum function to each subset of data to generate a
8 checkbit for the subset;

9 [[(3)]] (iii) adding the checkbit for each subset to the sub-signal to generate an
10 augmented sub-signal;

11 [[(4)]] (iv) routing at least two copies of the augmented sub-signal in parallel
12 through redundant portions of a distributed switch fabric of the switch to generate at least two routed
13 sub-signals for the sub-signal, wherein the distributed switch fabric has multiple switch components
14 adapted to route different portions of each of a plurality of incoming signals in parallel;

15 [[(5)]] (v) performing a checksum analysis on at least one of the routed sub-signals;
16 and

17 [[(6)]] (vi) selecting one of the routed sub-signals in accordance with the checksum
18 analysis; and

19 [[(d)]] (c) combining data from the selected routed sub-signals corresponding to the
20 plurality of sub-signals to generate [[the]] an outgoing signal.

1 2. (currently amended) The invention of claim 1, wherein step (a) comprises the step of
2 terminating overhead data in the received incoming signal, wherein the checkbits replace at least some of
3 the terminated overhead data during routing through the distributed switch fabric.

1 3. (currently amended) The invention of claim 2, wherein the size of each subset of data in
2 each sub-signal is selected such that the addition of the checkbits does not increase the size of the ~~data~~
3 augmented sub-signal routed through the distributed switch fabric relative to the size of the ~~data in the~~
4 incoming signal corresponding sub-signal.

1 4. (original) The invention of claim 3, wherein the incoming signal is in a SONET format
2 and further comprising the step of buffering a sufficient amount of data to ensure errorless protection
3 switching upon detection of a fault during the checksum analysis.

1 5. (currently amended) The invention of claim 4, wherein the selection of routed sub-
2 signals for each sub-signal for the incoming signal is independent of the selection of routed sub-signals
3 for each other sub-signal for the incoming signal.

1 6. (currently amended) The invention of claim 4, wherein the selection of routed sub-
2 signals for any one sub-signal for the incoming signal affects the selection of routed sub-signals for all
3 other sub-signals for the incoming signal.

1 7. (original) The invention of claim 1, wherein the incoming signal is in a SONET format.

1 8. (currently amended) The invention of claim 1, wherein the selection of routed sub-
2 signals for each sub-signal for the incoming signal is independent of the selection of routed sub-signals
3 for each other sub-signal for the incoming signal.

1 9. (currently amended) The invention of claim 1, wherein the selection of routed sub-
2 signals for any one sub-signal for the incoming signal affects the selection of routed sub-signals for all
3 other sub-signals for the incoming signal.

1 10. (original) The invention of claim 1, further comprising the step of buffering a sufficient
2 amount of data to ensure errorless protection switching upon detection of a fault during the checksum
3 analysis.

1 11. (currently amended) An ~~apparatus~~ switch for routing signals in a telecommunications
2 network, comprising:

3 (a) means for receiving an incoming signal at the switch;

4 (b) means for slicing data in the received incoming signal into a plurality of sub-signals,
5 wherein the plurality of sub-signals are processed in parallel by, [[: (c)]] for each sub-signal:

6 [[(1)]] (i) means for dividing the sub-signal into one or more subsets of data;

7 [[(2)]] (ii) means for applying a checksum function to each subset of data to
8 generate a checkbit for the subset;

9 [[(3)]] (iii) means for adding the checkbit for each subset to the sub-signal to
10 generate an augmented sub-signal;

11 [[(4)]] (iv) means for routing at least two copies of the augmented sub-signal in
12 parallel through redundant portions of a distributed switch fabric of the switch to generate at least two
13 routed sub-signals for the sub-signal, wherein the distributed switch fabric has multiple switch
14 components adapted to route different portions of each of a plurality of incoming signals in parallel;

15 [[(5)]] (v) means for performing a checksum analysis on at least one of the routed
16 sub-signals; and

17 [[(6)]] (vi) means for selecting one of the routed sub-signals in accordance with the
18 checksum analysis; and

19 [[(d)]] (c) means for combining data from the selected routed sub-signals corresponding to
20 the plurality of sub-signals to generate [[the]] an outgoing signal.

1 12. (currently amended) In a telecommunications network, a switch for routing one or more
2 incoming signals to generate one or more outgoing signals, comprising:

3 (a) a slicer for each incoming signal, wherein the slicer slices data in the incoming signal
4 into a plurality of sub-signals, wherein the plurality of sub-signals are processed in parallel by: [[:]]

5 [[(b)]] a checkbit generator for each sub-signal, wherein the checkbit generator:

6 [[(1)]] (i) divides the sub-signal into a plurality of subsets of data;

7 [[(2)]] (ii) applies a checksum function to each subset of data to generate a checkbit
8 for the subset; and

9 [[(3)]] (iii) adds the checkbit for each subset to the sub-signal to generate at least
10 two copies of an augmented sub-signal;

11 [[(c)]] redundant portions of a distributed switch fabric, wherein the redundant portions route in
12 parallel the copies of each augmented sub-signal to generate at least two routed sub-signals for the sub-
13 signal, wherein the distributed switch fabric has multiple switch components adapted to route different
14 portions of each of a plurality of incoming signals in parallel, and;

15 [[(d)]] a fault detector for each set of routed sub-signals, wherein the fault detector:

16 [[(1)]] (i) performs a checksum analysis on at least one of the routed sub-signals;

17 and

18 [[(2)]] (ii) selects one of the routed sub-signals in accordance with the checksum

19 analysis; and

20 [[(e)]] (b) a combiner for each outgoing signal, wherein the combiner combines data from
21 the selected routed sub-signals corresponding to the plurality of sub-signals to generate the outgoing
22 signal.

1 13. (currently amended) The invention of claim 12, wherein ~~step (a) comprises the step of~~
2 ~~terminating the switch is adapted to terminate~~ overhead data in the received incoming signal, wherein the
3 checkbits replace at least some of the terminated overhead data during routing through the distributed
4 switch fabric.

1 14. (currently amended) The invention of claim 13, wherein the size of each subset of data
2 in each sub-signal is selected such that the addition of the checkbits does not increase the size of the data
3 augmented sub-signal routed through the distributed switch fabric relative to the size of the data in the
4 incoming signal corresponding sub-signal.

1 15. (original) The invention of claim 14, wherein the incoming signal is in a SONET format
2 and further comprising buffers configured to buffer a sufficient amount of data to ensure errorless
3 protection switching upon detection of a fault by the fault detector.

1 16. (currently amended) The invention of claim 15, wherein the selection of routed sub-
2 signals for each sub-signal for the incoming signal is independent of the selection of routed sub-signals
3 for each other sub-signal for the incoming signal.

1 17. (currently amended) The invention of claim 15, wherein the selection of routed sub-
2 signals for any one sub-signal for the incoming signal affects the selection of routed sub-signals for all
3 other sub-signals for the incoming signal.

1 18. (original) The invention of claim 12, wherein the incoming signal is in a SONET format.

1 19. (currently amended) The invention of claim 12, wherein the selection of routed sub-
2 signals for each sub-signal for the incoming signal is independent of the selection of routed sub-signals
3 for each other sub-signal for the incoming signal.

1 20. (currently amended) The invention of claim 12, wherein the selection of routed sub-
2 signals for any one sub-signal for the incoming signal affects the selection of routed sub-signals for all
3 other sub-signals for the incoming signal.

1 21. (original) The invention of claim 12, further comprising buffers configured to buffer a
2 sufficient amount of data to ensure errorless protection switching upon detection of a fault by the fault
3 detector.

1 22. (new) The invention of claim 1, wherein each augmented sub-signal is the same size as
2 the corresponding sub-signal.

1 23. (new) The invention of claim 12, wherein each augmented sub-signal is the same size as
2 the corresponding sub-signal.